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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Thilo Marx

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EXAMINER

RAINEY, ROBERT R

ART UNIT

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2629

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/583,822	Applicant(s) MARX, THILO	
	Examiner ROBERT R. RAINEY	Art Unit 2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 17-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 17-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 June 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>6/21/06</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the fourth switching means must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

2. Claim 17 objected to because of the following informalities: The claim ends with a comma rather than a period. Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claims 17-20, 22-26** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,917,350 to *Pae et al.* ("*Pae*") in view of U.S. Patent No. 7,138,967 to *Kimura* ("*Kimura*").

As to **claim 17**, *Pae* discloses a light emitting display including a multiplicity of elements arranged in rows and columns (see for example Abstract), wherein the elements include a light-emitting means which emits light when a current flows through it (see for example Fig. 2 item "OEL"), having a first current control means which is connected in series with the light-emitting means (see for example Fig. 2 item "P0"), wherein a control signal is supplied to a control electrode of the first current control means (see for example Fig. 2 item "ramp"), having a switching means (see for example Fig. 2 item "P1") which is

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controlled by a switching signal (see for example Fig. 2 item "SEL") and which is arranged in the feed to the control electrode; and a control electrode (see for example Fig. 2 item "data line"; it is a control electrode because it controls the current through P0) of a second current control means (the voltage ramp generator, which is not shown but implied in Fig. 2, this is a current control means for one or all of the facts that it supplies current, it controls the current through P0, and it is a control terminal of the overall current controlling system pictured in Fig. 3; note that the correct voltage to be stored to achieve a desired current through the light emitting element is achieved by sampling the current passing through P0 by diverting the current during a writing period via P2 and P3 to a circuit that stores the voltage when the correct current is reached, see Fig. 3)

Pae does not expressly disclose the switching means comprising a first switching means which is controlled by a first switching signal, and a second switching means which is arranged in series with the first switching means in the feed to the control electrode of the first current control means and which is controlled by a second switching signal.

Kimura discloses a display device and driving method and in particular the use of a first switching means (see for example Fig. 44 item 1448) which is controlled by a first switching signal (see for example Fig. 44 "dot-sequential line CLP"), and a second switching means (see for example Fig. 44 item 1444) which is arranged in series with the first switching means in the feed to the control electrode of the first current control means and which is controlled by a second

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switching signal (see for example Fig. 44 "signal line GH") to store the current control voltage.

Pae and *Kimura* are analogous art because they are from the same field of endeavor, which is active matrix displays.

At the time of invention, it would have been obvious to a person of ordinary skill in the art to improve the circuit of *Pae* by replacing the single switch with the two switches and signals of *Kimura*. The suggestion/motivation would have been to provide advantages such as to allow the current level to be set in a dot-sequential fashion (see for example 59:9-17).

As to **claim 18**, in addition to the rejection of claim 17 over *Pae* and *Kimura*:

Pae further discloses a drive voltage signal cyclically falling from a predetermined starting value to an end value applied to a terminal of the switching means (see for example Fig. 2-4 "ramp").

Kimura discloses generating a desired current through a transistor and light emitting element by providing that the first (see for example Fig. 44 item 112, which has the same function as *Pae* "P0") and second current control means (see for example Fig. 44 item 1445) form a current mirror circuit when the first and second switching means are closed (see for example Fig. 44), wherein a drive signal (see for example Fig. 44 "current line CL") is switchably supplied to the second current control means via third switching means (see for example Fig.

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44 item 1443), wherein the control signal supplied to the control electrode of the first current control means is dependent on the drive signal (see for example Fig. 44).

At the time of invention, it would have been obvious to a person of ordinary skill in the art to replace the voltage ramp generation circuit of *Pae* with a current ramp generation circuit followed by the current signal to voltage signal circuitry, or current mirror, of *Kimura*. The suggestion/motivation would have been to provide advantages such as to ensure that a constant current flows irrespective of fluctuation in threshold voltage, mobility, or the like (see for example *Kimura* 5:38-45).

Pae and *Kimura* disclose the claimed invention except for the signal rising instead of falling. Since both rising and falling ramps were known to those skilled in the art and positive and negative voltage driven transistors were known it would have been obvious to one skilled in the art to replace a positive going ramp for a negative going ramp. One of ordinary skill could have implemented the modification and it would not have been beyond the reach of ordinary skill to consider both alternatives.

As to **claim 19**, in addition to the rejection of claim 17 over *Pae* and *Kimura*:

Already disclosed in the rejection of claim 17 is the teaching that current control means is a controllable voltage source.

As to **claim 20**, in addition to the rejection of claim 17 over *Pae* and *Kimura*, *Kimura* further discloses a signal holding means connected to the control electrode of the first current control means wherein the control signal is held when the first and/or second switching means interrupts the supply of the control signal to the control electrode of the first current control means (see for example Fig. 44 item 111).

As to **claim 22**, in addition to the rejection of claim 17 over *Pae* and *Kimura*, *Kimura* further discloses a common first switching signal is supplied to a plurality of first switching means in elements in a line and/or a column (see for example Fig. 45).

Claim 23 claims the method implicit in the rejection of claim 18 plus the rejection of claim 17 and is rejected on the same grounds and arguments.

Claim 24 claims the method implicit in the rejection of claim 22 plus the rejection of claim 18 plus the rejection of claim 17 and is rejected on the same grounds and arguments.

Claim 25 claims the method implicit in the rejection of claim 21 plus the rejection of claim 18 plus the rejection of claim 17 and is rejected on the same grounds and arguments.

As to **claim 26**, in addition to the rejection of claim 23 over *Pae* and *Kimura*, *Pae* further discloses an idle time provided between two cycles (see for example Fig. 4 period T2, which shows a flat or idle period in Vramp between the ramping cycles).

5. **Claim 21** is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,917,350 to *Pae et al.* ("*Pae*") in view of U.S. Patent No. 7,138,967 to *Kimura* ("*Kimura*") and further in view of U.S. Patent No. 6,246,180 to *Nishigaki* ("*Nishigaki*").

As to **claim 21**, in addition to the rejection of claim 17 over *Pae* and *Kimura*:

Pae and *Kimura* does not expressly disclose that the control signal and/or the signal held by the signal holding means can be put into a predetermined state by means of a fourth switching means.

Nishigaki discloses an organic EL display device and in particular that the control signal and/or the signal held by the signal holding means can be put into

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a predetermined state by means of a fourth switching means (see for example Fig. 4 item 20).

Pae and *Kimura* and *Nishigaki* are analogous art because they are from the same field of endeavor, which is active matrix displays.

At the time of invention, it would have been obvious to a person of ordinary skill in the art to improve the circuit and method of *Pae* and *Kimura* by adding the reset switch of *Nishigaki*. The suggestion/motivation would have been to provide advantages such as to blank the video signal at the end of the frame period or before the start of a new frame (see for example *Nishigaki* 3:45-50).

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent Application Publication No. 2003/0076285 to Albu et al. teaches a ramped signal applied commonly to a matrix of pixels and stored in pixels according to row and column signals.

U.S. Patent Application Publication No. 2006/0250331 to Sempel et al., while not available as art to the examiner, discloses a similar circuit to that disclosed by the applicant and has earlier foreign priority and filing dates.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ROBERT R. RAINEY whose telephone number is

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(571)270-3313. The examiner can normally be reached on Monday through Friday 8:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amare Mengistu can be reached on (571) 272-7674. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/RR/

/Amare Mengistu/
Supervisory Patent Examiner, Art Unit 2629